



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/685,771	10/11/2000	Takashi Abe	Q60938	5049

7590 03/21/2003
Sughrue Mion Zinn Macpeak & Seas
2100 Pennsylvania Avenue N W
Washington, DC 20037

EXAMINER

PATEL, ISHWARBHAI B

ART UNIT	PAPER NUMBER
----------	--------------

2827

DATE MAILED: 03/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/685,771

Applicant(s)

ABE, TAKASHI

Examiner

Ishwar (I. B.) Patel

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-10 and 13-18 is/are pending in the application.
- 4a) Of the above claim(s) 4-7 and 13-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,8-10,17 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on January 31, 2003 has been entered.

Election/Restrictions

2. Original election / restriction requirements maintained as the prosecution is opened again in this continued examination of the application.

The claims rejoined during the allowance are withdrawn from further consideration.

Claims 1, 8-10 and 17-18, reading on specie 1, are examined.

Claims 4-7 and 13-16 are withdrawn.

Claims 2-3 and 11-12 were cancelled.

Claim Rejections - 35 USC § 103

3. Claims 1, 8-10, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marx et al., US Patent No. 5,376,759, hereafter referred to as Marx,

in view of Japanese Unexamined Patent Application Publication H7-263871, hereafter JP871, provided by the applicant and Crepeau, US Patent No. 4,249,302.

Regarding claims 1 and 10, Marx discloses a substrate comprising:

pads which are provided on the surface of said substrate (integrated circuit positions 18 with plated through holes 28, see figure 3, column 7, line 39-55); and

surface layers which are kept to the ground potential and cover the surface of said substrate except said pads and their periphery, wherein said surface layers include a top main surface and a bottom main surface (top and bottom outermost layers 20, 22 of the sandwich arrangement are also conductive layers and are for connection to electrical ground potential, see figure 3,4, column 7, line 39-55); and

the conductive elements which electronically connect said top and main surface and said bottom main surface (the conductive edge shielding layer 43 of the edge surface 50 extends to the top and bottom outermost conductive layers 20,22 and is electrically connected directly to each of the outer conductive layers, see figure 3,4, column 7, line 55-68); but

fail to explicitly disclose the conductive element cover the entire side of said substrate with said top main surface and said bottom main surface. However, the crux of the invention of Marx is to provide the complete side shielding and wherever it is not

possible to provide the continuous shielding, the area is covered by conductive via hole with alternative location to cover the gap between two vias, see arrangement of via 46.

Further, as shown by JP871, see report, reference number, Q60938, provided by the applicant, it is known in the art to provide a complete shielding on the side to further reduce the electromagnetic interference.

Regarding the opening of the pads on the top surface, Marx discloses the opening for a group of the pads, rather than for the individual pads. However, it will depend upon the degree of protection from the electromagnetic interference for the specific system, and as shown by Crepeau, figure 4, opening only around the periphery of the pads can be provided for additional protection from the electromagnetic interference.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the circuit board of Marx with conductive element covering the entire side of said substrate with said top main surface and said bottom main surface and with opening around pads, as taught by JP871 and Crepeau, in order to reduce the disturbances in and out of the circuit and the resultant better performance of the device.

Regarding claims 8 and 17, the modified assembly of Marx further discloses a signal layer which is provided between said top main surface and said bottom main surface, and has a pattern which is connected to at least one of said pads (internal signal

Art Unit: 2827

layer 12 having connection with the plated through hole 28, see figure 3,4, column 7, line 39-55).

Regarding claims 9 and 18, the modified assembly of Marx inherently discloses the interval between said pads and said surface layer defined to prevent said pad from short-circuiting as applied to claims 1 and 10 above.

Response to Arguments

4. Applicant's arguments with respect to claims 1 and 10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Soderholm discloses circuit board with edge plating 20, figure 2, around the entire board.

Higgins, Jr., discloses a multilayer circuit board with ground layers 202 and 218 on top and bottom respectively and metal 104, figure 1 and 2, for shielding the circuitry from harmful radio frequency interference.

Schreffler discloses conductive material 60 as chassis ground for the Faraday shield, see figure 1.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (703) 305 2617. The examiner can normally be reached on M-F (8:30 - 5).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L Talbott can be reached on (703) 305 9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3431 for regular communications and (703) 305 7724 for After Final communications.

Application/Control Number: 09/685,771
Art Unit: 2827

Page 7

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

ibp
March 16, 2003


KAMAND CUNEO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800